

FIG. 1A (PRIOR ART)

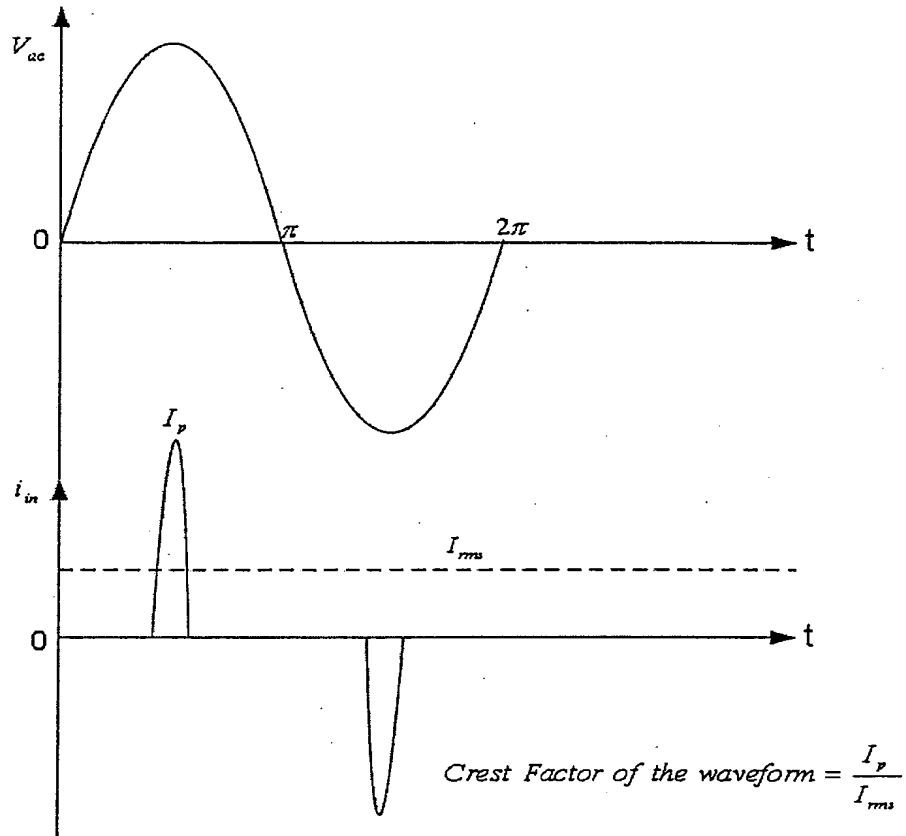


FIG. 1B (PRIOR ART)

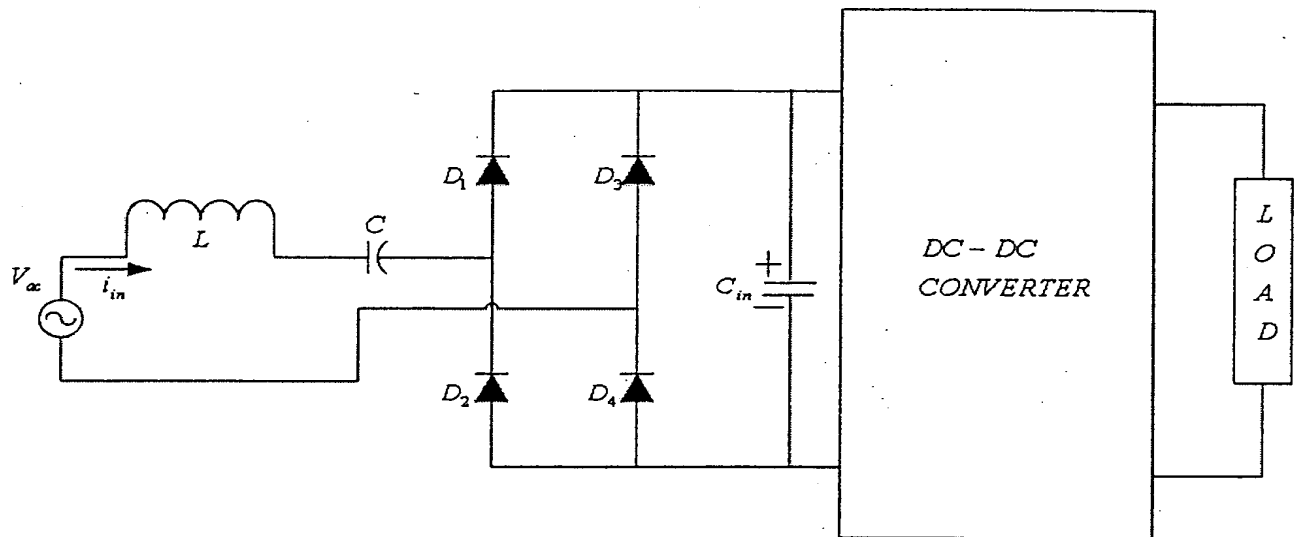


FIG. 2 (PRIOR ART).

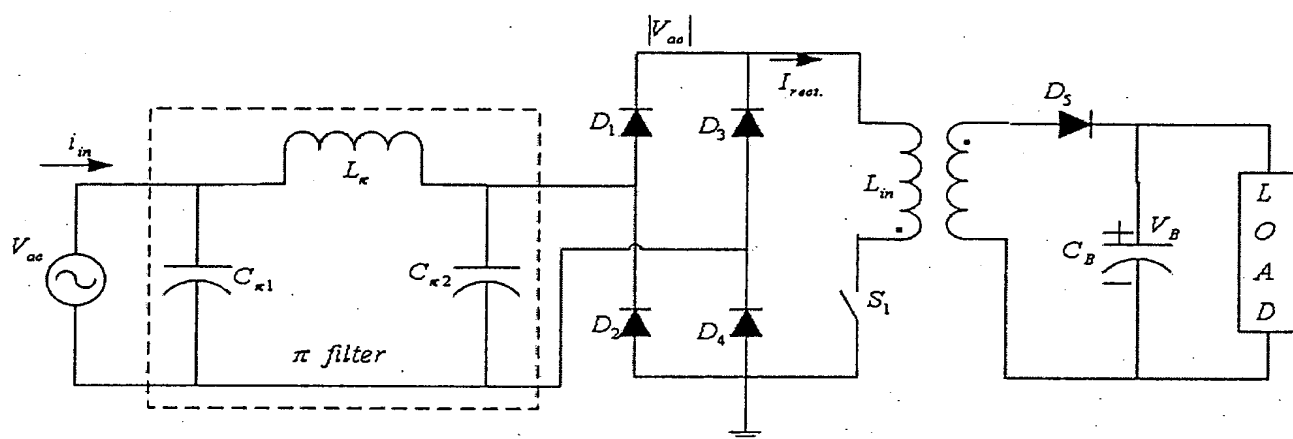


FIG. 3 (PRIOR ART)

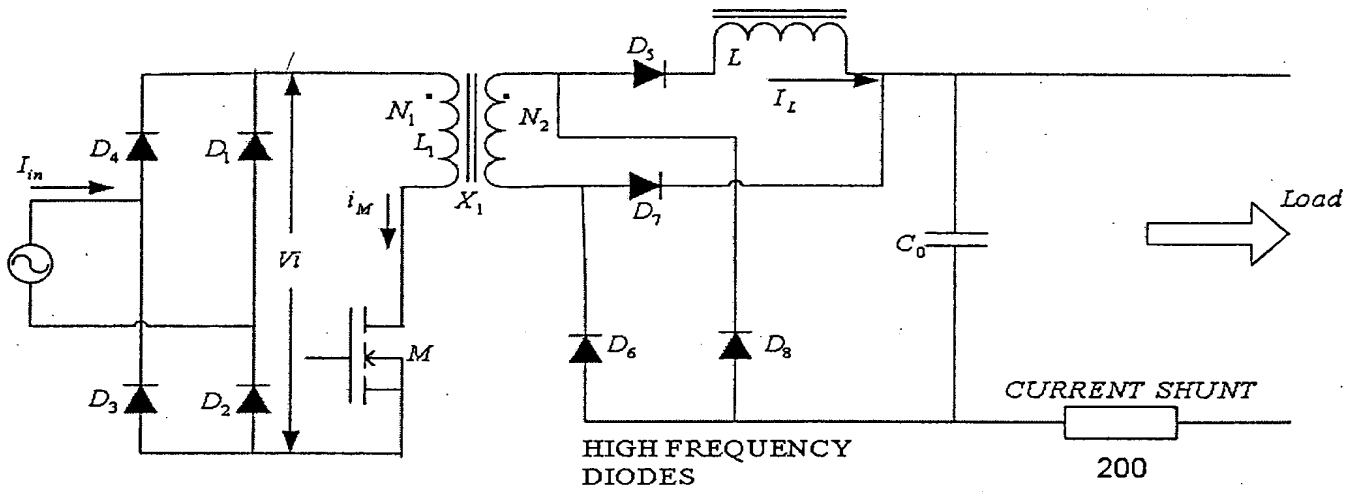


FIG. 4

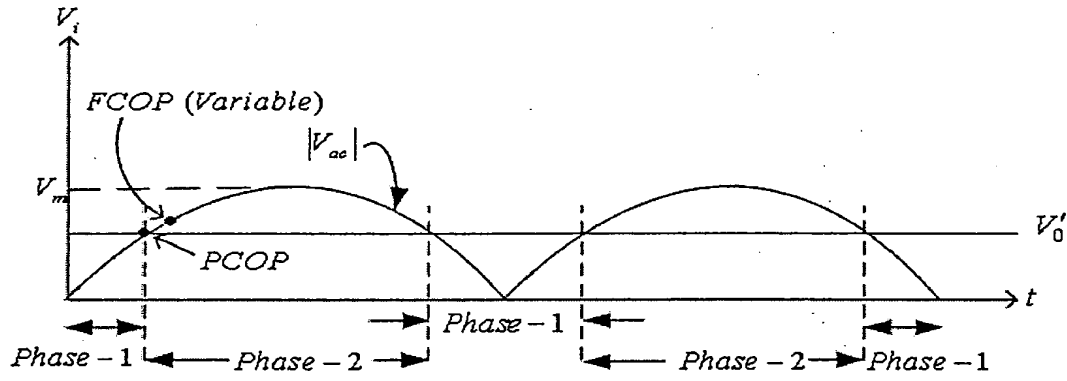


FIG. 5

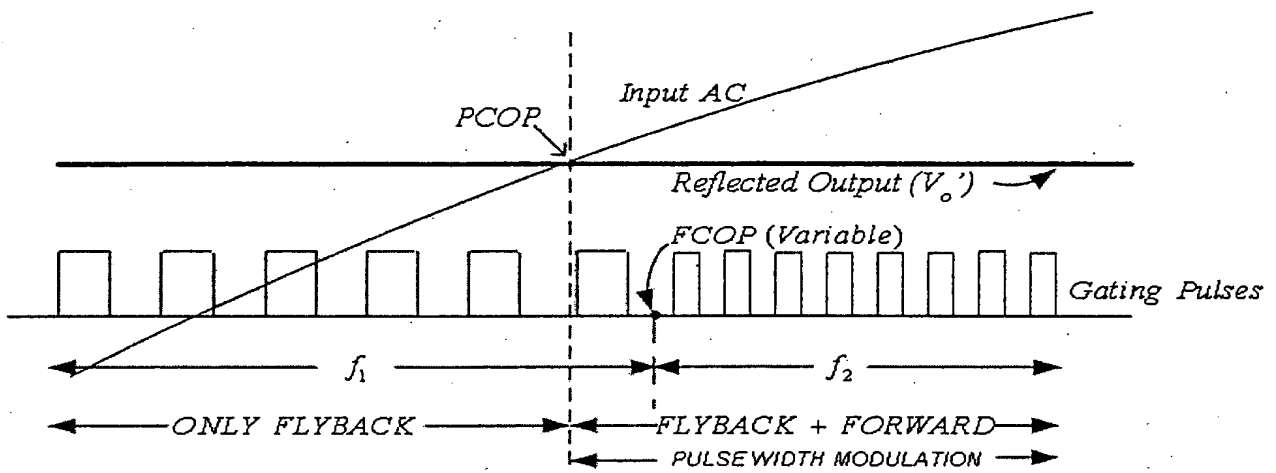


FIG. 6

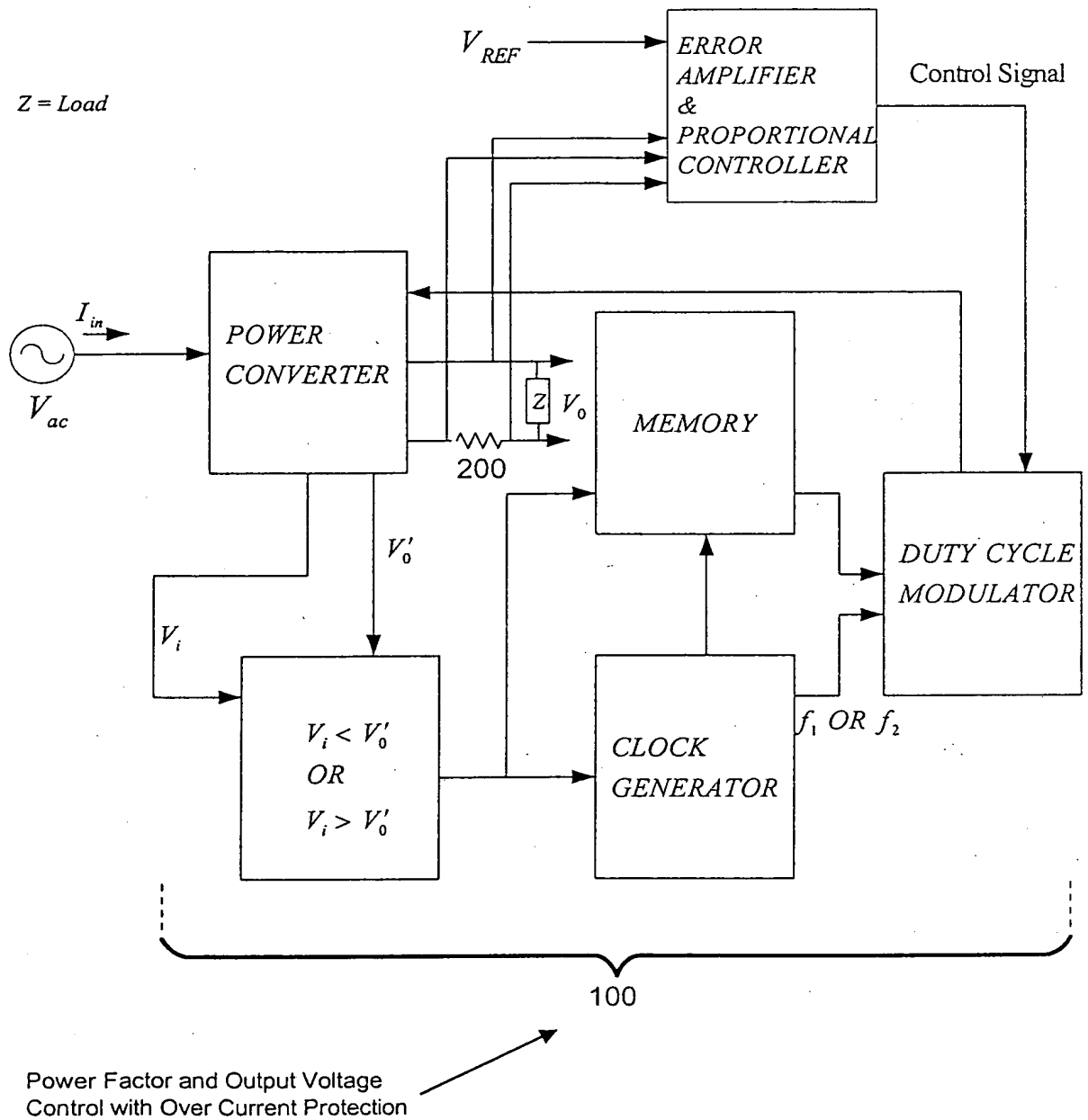


FIG. 7

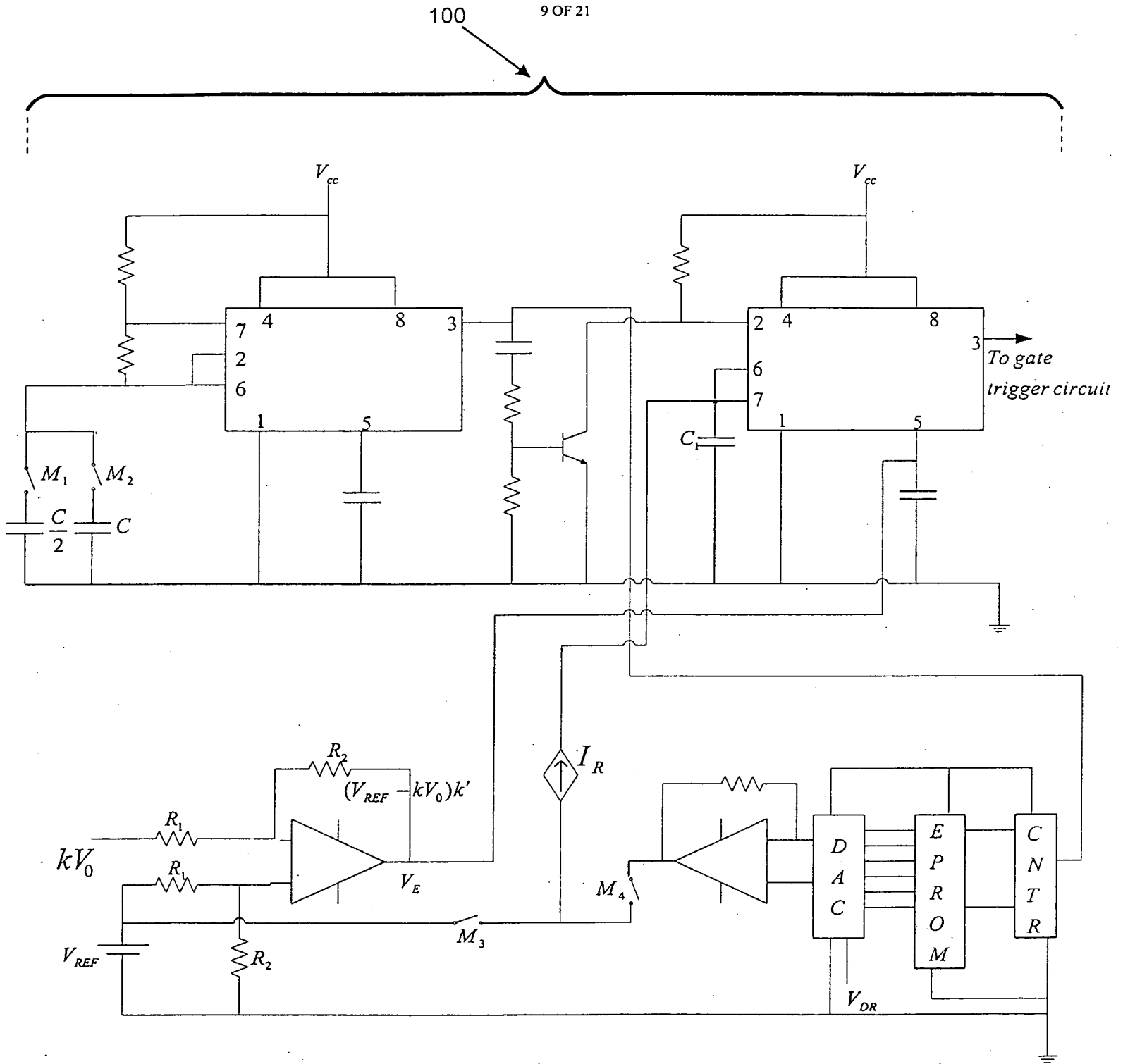
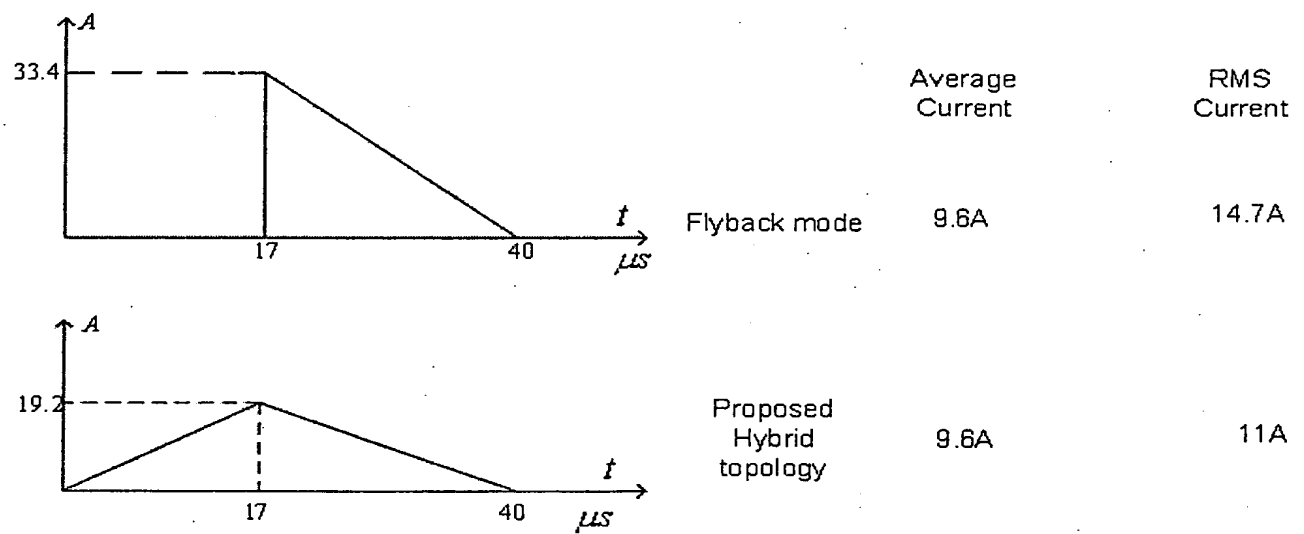


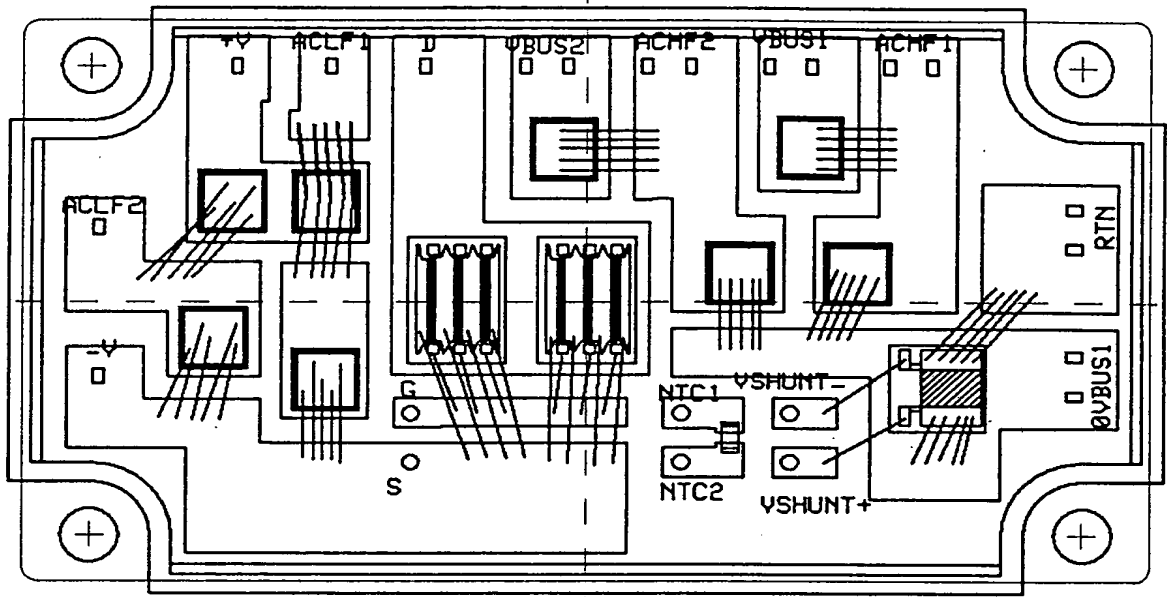
FIG. 8 Schematic of Power Factor and Output Voltage Control



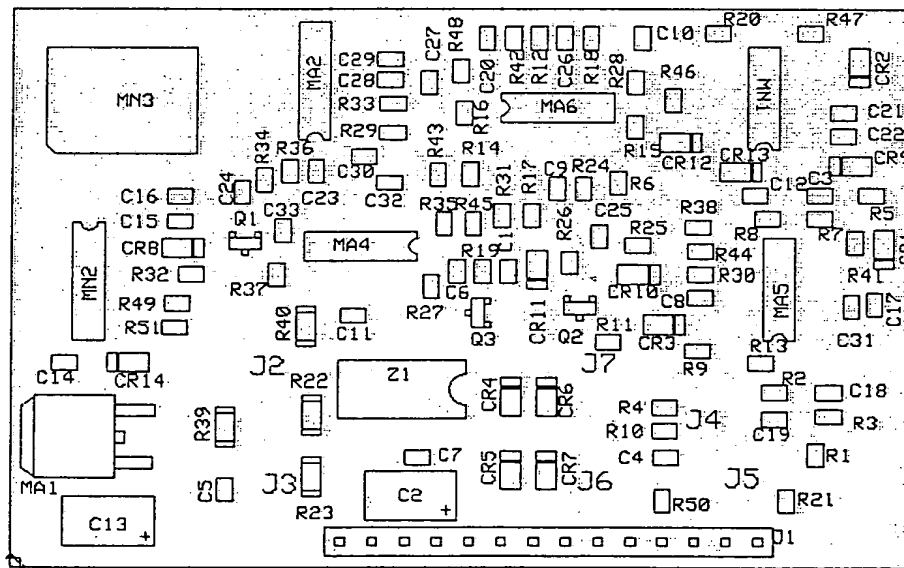
Secondary current waveforms

Hybrid technology helps significantly to reduce both peak and RMS currents

Fig. 9 The secondary current waveforms for a flyback converter and



(a) Smart converter module - Power stage



(b) Smart converter module – control stage

Fig. 10 Power Module Layout

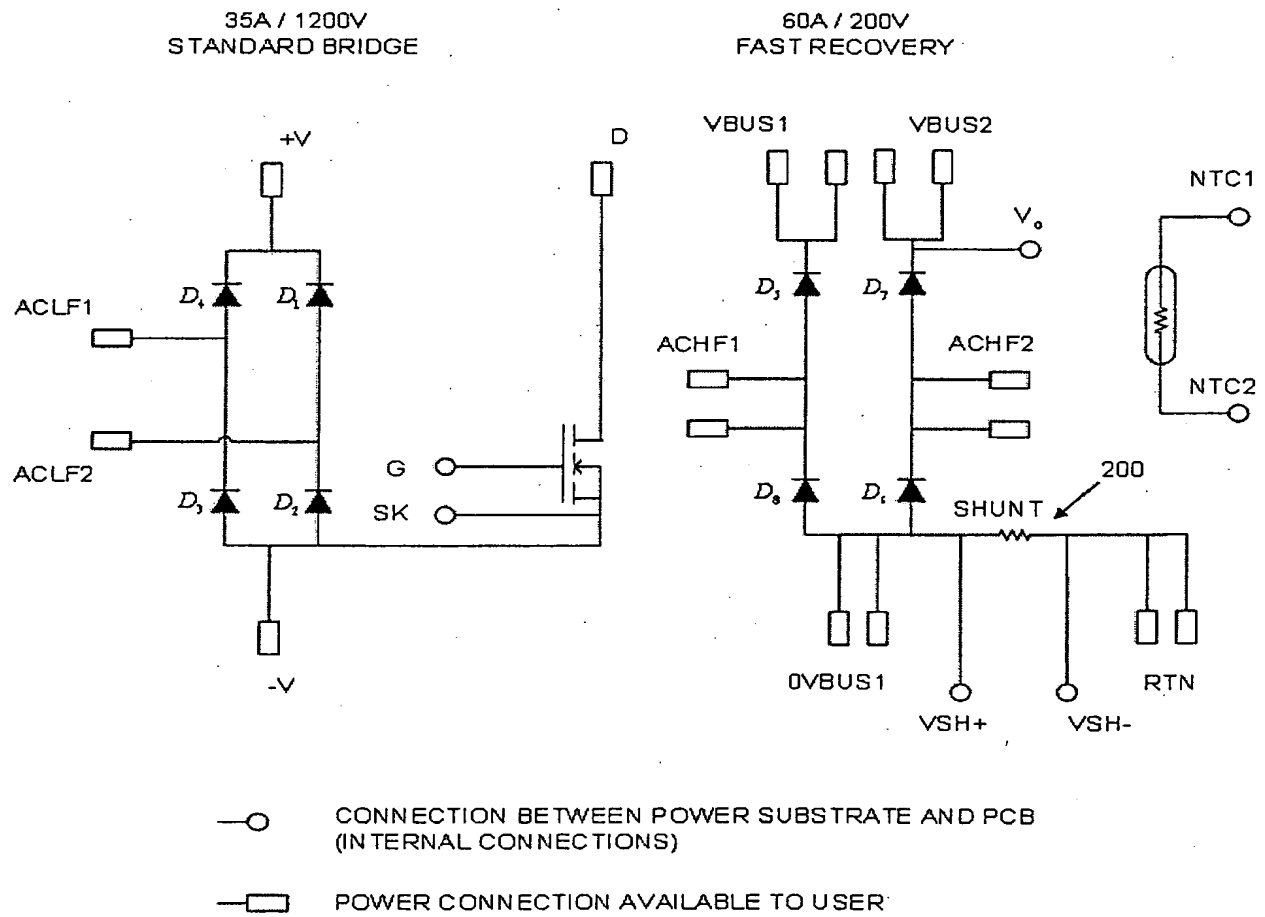


FIG. 11

- (1) Module base plate (IMS substrate)
- (2) Silicon chips and other power components, soldered to the substrate: upper connections to chips via ultrasonically bonded aluminium wires.
- (3) Moulded outer wall
- (4) Silicone gel conformal coating over substrate assembly
- (5) Resin top layer to fill the cavity
- (6) Internal PCB, with all necessary control and protection functions: hybrid SMD/chip construction.
- (7) 1 x 1.5 solderable power connectors
- (8) Small signal connector. These connectors are available to the user for control circuit inputs (e.g. power supply points, dc output voltage feedback signal etc.)

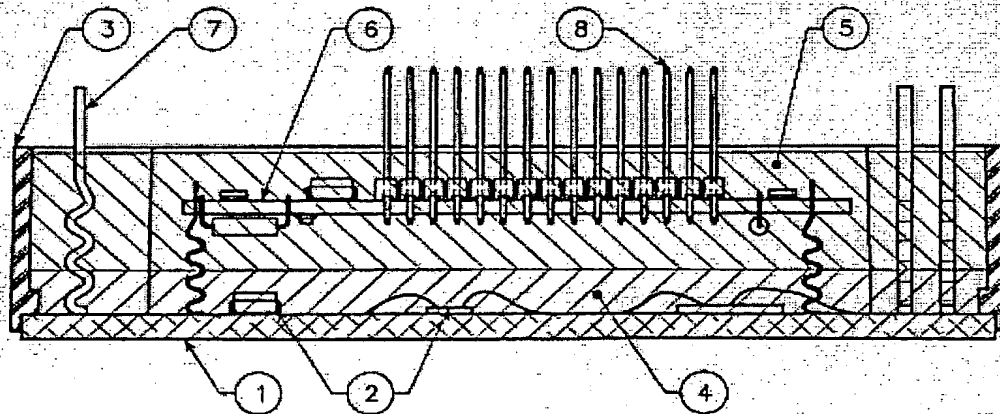


Fig. 12 Cross-section of the Module

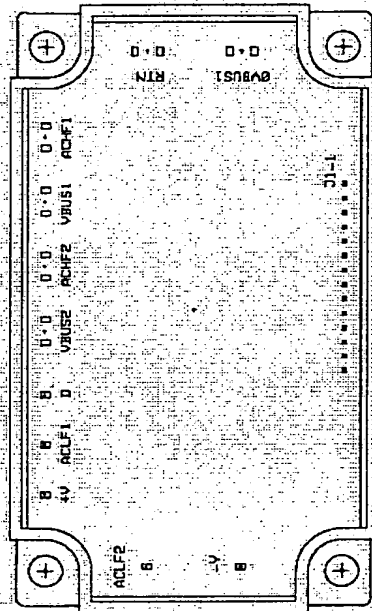


FIG. 13

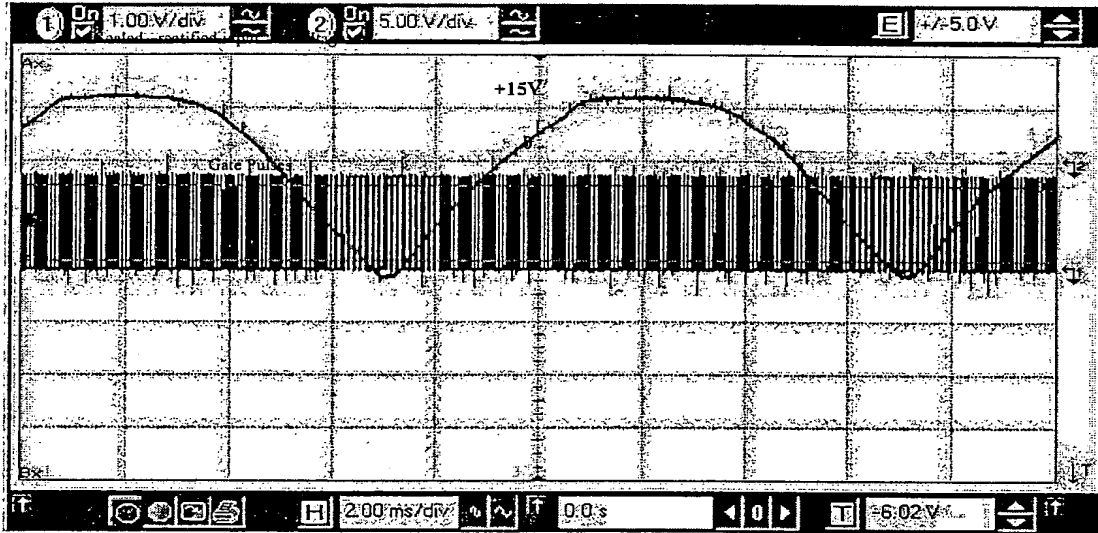


FIG. 14

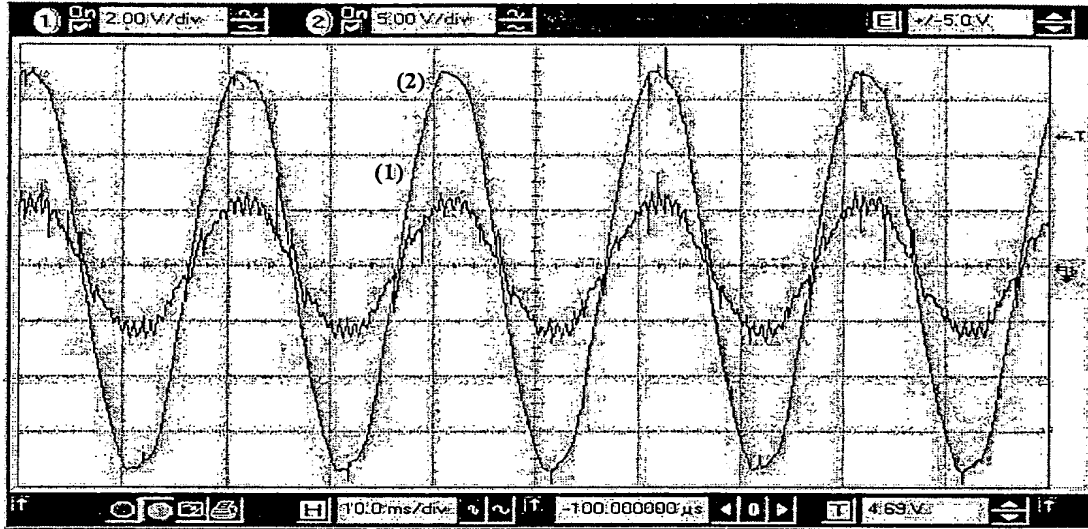


FIG. 15

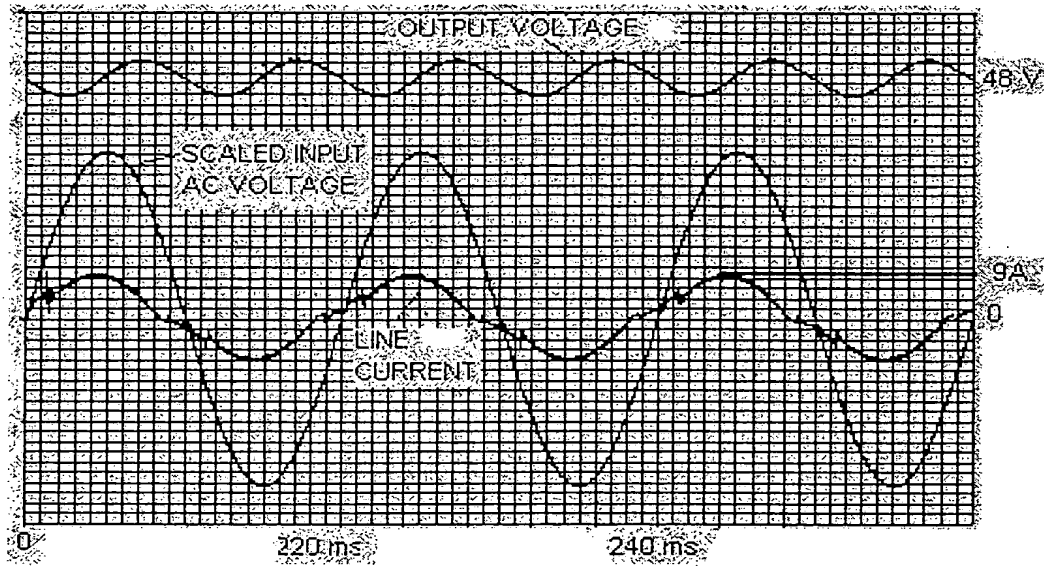


FIG. 16

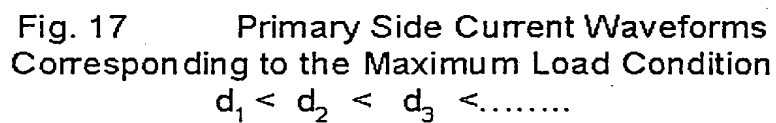


Fig. 17 Primary Side Current Waveforms
Corresponding to the Maximum Load Condition
 $d_1 < d_2 < d_3 < \dots$

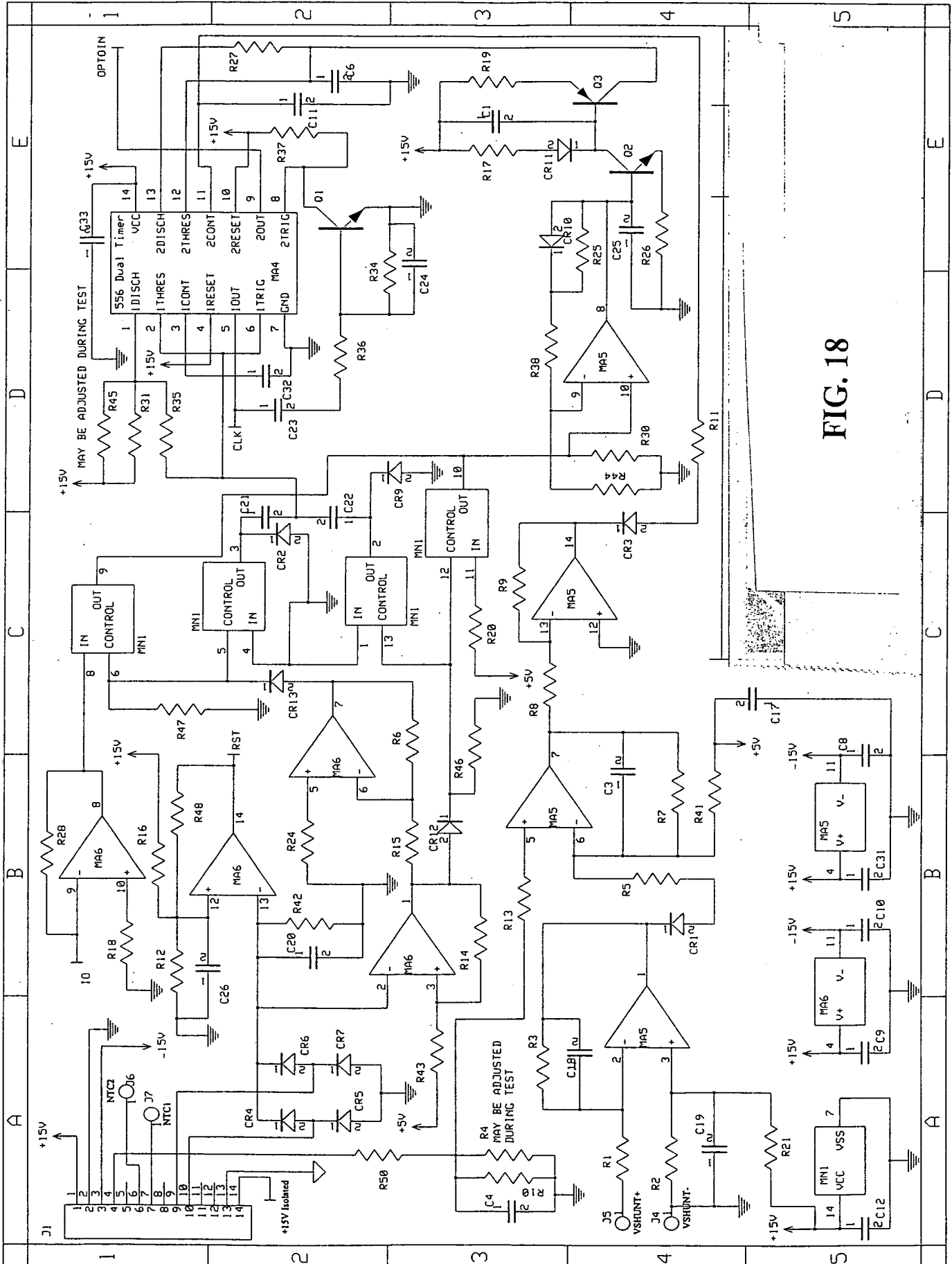
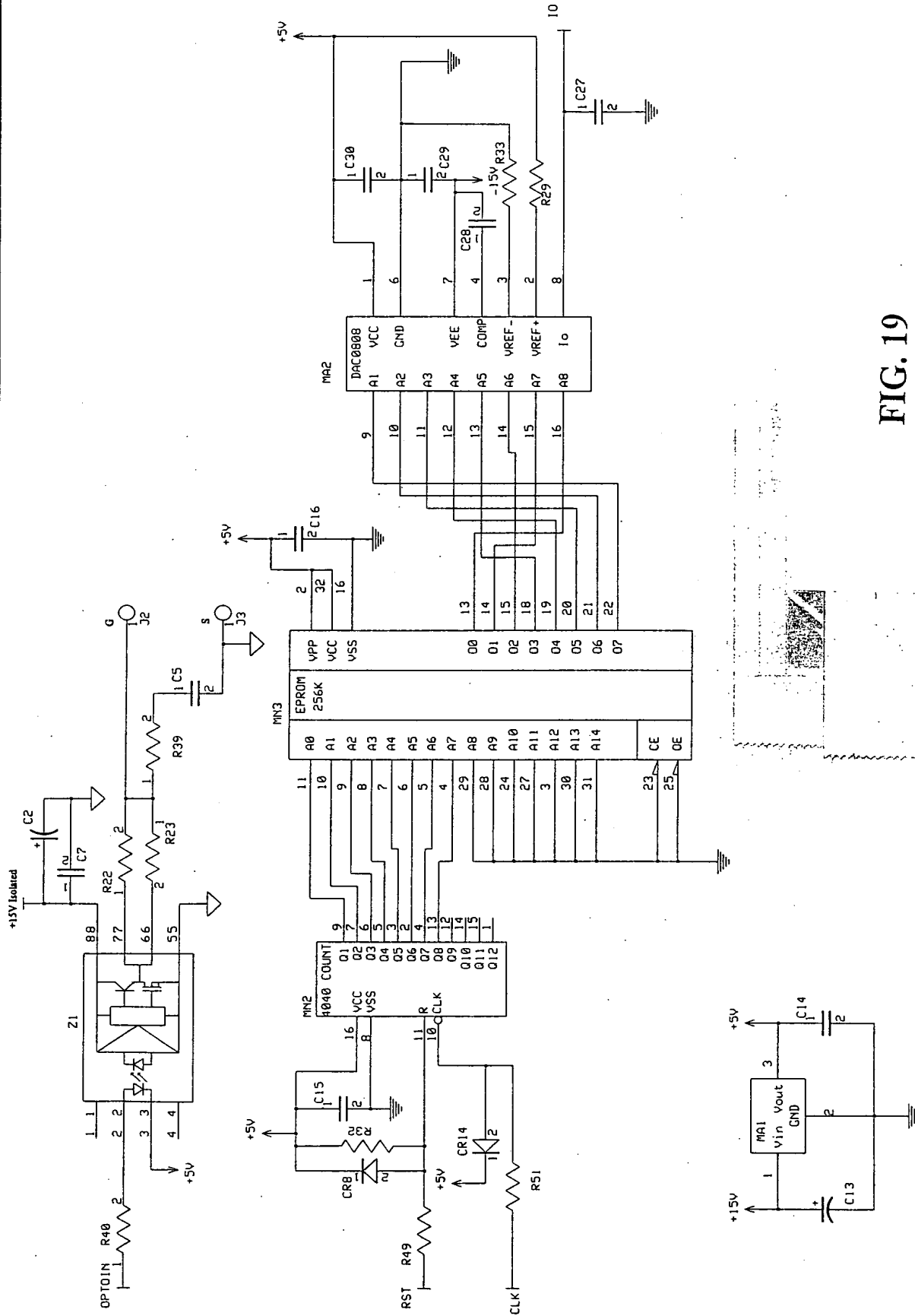


FIG. 19



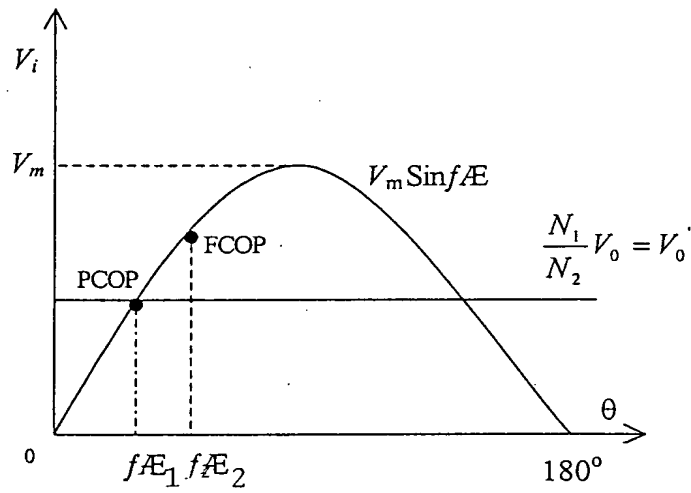


Fig. 20 Diagram showing relative positions of PCOP and FCOP